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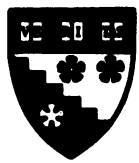

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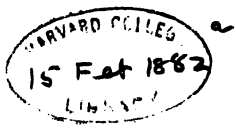


B.A. Green

INTRODUCTION.

No one, who has paid any attention to the subject, can doubt that the right use of properly-regulated exercises must have a most beneficial influence on childhood and youth, in giving the due development to their organism.

These exercises may be introduced with the greatest advantage into every school and seminary; in fact, they should constitute a part of sound and good education. A healthy body is the best condition for the development of a healthy mind. It is hoped that parents, and all those who are engaged in the noble profession of tuition, will give their earnest attention and their practical support to the enlightened system of Ling.

It need not be said that these exercises are far superior to the present drill for all the purposes of military training.

MOVEMENTS OR EXERCISES.

MOVEMENTS FOR THE DEVELOPMENT AND STRENGTHENING OF THE HEALTHY BODY.

I. *The general rules for the development of the healthy body* are,—

1. The harmonious development of all parts of the human body, by well-determined movements.

2. Well-determined movements are those which are carefully selected in relation to each individual body to be developed by them.

3. The body is justly developed, if all its parts are in the most perfect harmony with each other that is possible, according to the peculiar faculties of every person.

4. The human body cannot be more developed than its faculties permit.

5. By want of exercise the natural faculties of man can be suppressed, but not extinguished.

6. By exercises erroneous and contrary to our designs, natural talents can be even prevented in their development, therefore improper exercises contribute to produce, with respect to the harmony of the bodily development, more injury than utility.

7. Every partial (one-sided) development makes the movements more difficult as well to learn as to retain them; a manifold development, on the contrary, simplifies and facilitates them.

8. Stiffness or immobility in a certain part of the body is, in many persons, generally only a partial over-strength, which is always accompanied by a corresponding weakness in other parts.

9. The greater strength of one part can be diminished, and the least strength of other parts increased, by equally-distributed labour.

10. The individual strength and weakness are not determined by the larger or smaller superficies of certain parts of the body, but constitute the relation between all parts of the body.

11. Every true and increased strength is a simultaneous concentration in the action and reaction of the parts, which necessarily shows itself at one and the same time, if the strength attains the highest potency.

12. Health and strength in its height are therefore synonymous; both depend upon the harmony between all parts of the body.

13. If we begin with the simplest elementary movements, we can proceed by degrees to the most difficult, without the least danger, because the individual knows his strength, and as well what he does as what he is able to do.

14. The aim of the following exercises is to develope the human body harmoniously by well-defined movements.

15. Our body so developed possesses real strength, that is, such strength as is equally distributed in all directions, and which enables us to support more easily the differences of temperature, bodily fatigue, and other external influences.

16. A strength so distributed preserves us in good spirits, and makes all our movements easy.

17. The exercises are divided according to the principal parts of our body, viz. into those of the arms, legs, head, and trunk; but as all these parts must be in perfect harmony, it is not a matter of indifference whether we exercise ourselves only in certain movements, because our body would not so obtain the equal development desired.

18. In the beginning the positions must be learned.

19. No movement is to be done with any effort.

20. The breathing must not be suppressed during the exercises.

21. The dress must be loose. The best dress for ladies is a blouse (vide figure), without stays and bustles, which become very soon superfluous, if these exercises are well done, and used in moderation.

22. The movements with the head and trunk must be done slowly, as well as those of the legs, by which the body is raised or lowered; the more the strength and flexibility increase, the slower the above-mentioned movements must be executed.

23. The movements with the arms are done quickly, and the quicker they are, the more the strength is developed.

24. The movements must vary, and one and the same movement must not be repeated oftener than two or three times one after the other.

25. The movements, although changed, must not be executed only and principally with one part, because these would become stronger than all the others, and would prevent the harmony of the body.

26. The exercises must be performed by healthy persons, according to the numeric order of the tables of exercises; we should not proceed to a following table before we understand the execution of the preceding one.

27. Between the single exercises an interval of half a minute to two minutes is desirable.

28. Not more than ten to twelve exercises should be done at once each day.

29. All persons who feel indisposed, or in whom one or another part is weaker, should consult the physician acquainted with the effects of movements, as to whether and as to what exercises they shall use, for otherwise exercises of this kind become injurious.

30. The following exercises are called free movements because they are executed without the help of any technical apparatus.

Their great advantage consists in this—

a. That the movements being very simple are easily understood, as well as easily performed.

b. They can be executed at the same time by a great number of persons, in which way much time is spared.

c. The expense of the apparatus and machines is saved.

d. The free movements can be executed in any place, as well in the open air as in-doors; even in a room the possibility of making these exercises is not at all interfered with.

e. As every motion of a free exercise is to be observed exactly, and to be executed (if there are many persons) at the same time, all must accustom themselves to a certain attention and precision, by which means the sense of order is developed, and the attention excited.

f. The free movements produce an agreeable feeling in the movements of the body.

g. They promote, more than the movements on machines, a good posture of the body, and an appropriate appearance and deportment in ordinary life.

31. Every movement which is used for the harmonious development of our body, must be a definite movement, that is, it must have a definite form.

32. Every definite form has a definite point, in which it begins, and this is the commencing position.

33. All the positions in which our body, or a part of

it, is between the commencing and final position, are called intermediate positions.

34. The position in which the moved body returns to the state of rest is the final position.

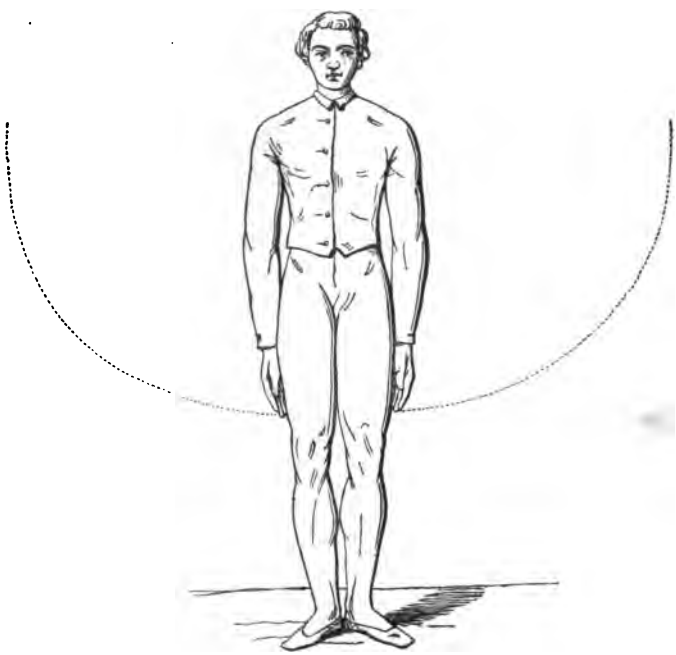
35. All exercises which are composed of different movements are divided into different spaces of time, during which a certain movement is executed; these divisions of time are called motions, and are indicated by the numbers of " one, two," etc.

THE POSITIONS.

The positions of the body with respect to the basis are different, according to whether the feet touch each other, or there is a certain distance between them.

FIRST POSITION.

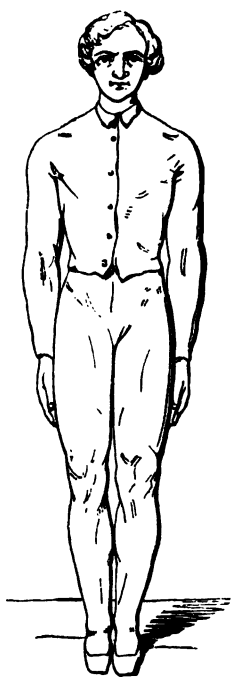
Rectangular heel on heel, or fundamental position.



The feet touching each other with the heels, and forming a right angle. This position is definitely chosen as the first in every standing commencing position, and called *fundamental position.*

SECOND POSITION.

Feet close together.



The feet being in the rectangular position, heel on heel, the toes a little lifted from the ground, and immediately both feet turned quickly on the heels, so that the inner parts of the feet touch each other from the heels to the toes. If you resume the first position, this is expressed by *feet outwards,* and the feet are turned in the above-mentioned manner, but in an opposite direction.

Positions with a distance between the feet.

The distance may be one, two, or three times the length of a foot from the toe to the heel, and the direction of the feet remains either as in the rectangular, or as in the position with the feet close together, with respect to each other.

THIRD POSITION.

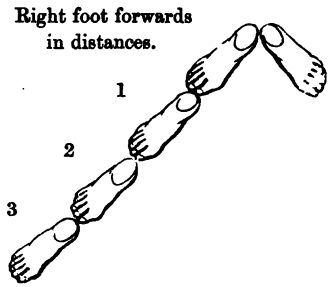
Right or left foot forwards.

The above-named foot is placed at double its length (measured from the heel of the other foot) forwards in the same line as the one in which it was in the previous position. For instance, if it were in the rectangular position, the foot always retains the rectangular direction, with respect to the other foot; if the previous posi-

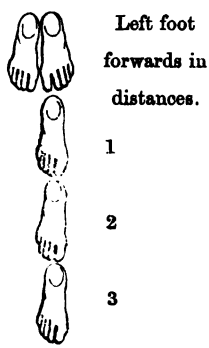
tion were *feet close together*, the feet remain in the same line.

FOURTH POSITION.

Right or left foot completely forward.



Is the same as No. 3, only the distance is three times the length of a foot. The weight of the body is placed on the fore foot, the knee of which is bent perpendicularly to the instep; head and shoulders remain immovable; the trunk and the hind leg in a straight line, inclined forwards. If you wish the advanced foot placed back, this movement is indicated by *right or left foot placed back*, after which the above foot must be placed by a short step near the other, which remains quiet all the time.



If the above-mentioned distance should be taken in the position with closed feet, the foot which is to be moved must be in a straight line before the other, which remains quiet. If the foot is to be drawn back, the position with closed feet must be resumed, according to the preceding direction of *right or left foot placed back.*

FIFTH POSITION.

Feet alternately put completely forward.

The same position as No. 4, in two motions.

First. The foot pushed forwards is again placed in its former position.

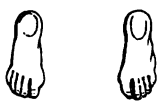
Second. The other is to be placed forwards in its own direction, as far as the distance is in which the foot drawn backwards was before.

SIXTH POSITION.

Feet placed apart.

Feet placed apart and straight, from the position *feet close together*.

In one distance.

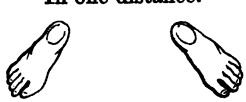


In two distances.

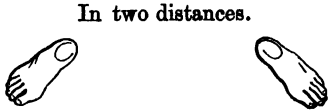
In three distances.

Feet placed apart from the fundamental position.

In one distance.



In two distances.



In three distances.

In two motions. The desired single, double, or triple distance must be taken between the feet, as well in the fundamental as in the position with feet close together.

First motion. The right or left foot is placed apart, at the distance of the length of a foot, to the left or right, so that the heels remain in the same direction, and that the angle of the feet does not become altered.

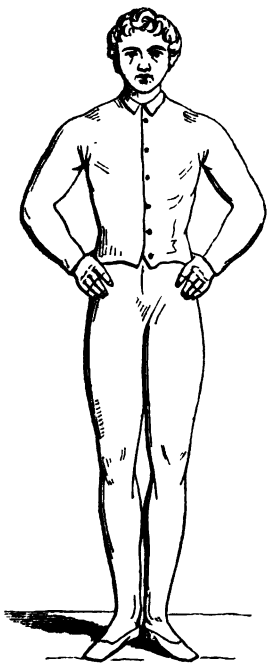
Second motion. The left or right foot must be placed to the left or right at the length of a foot, thus the distance between the feet is now twice the length of one foot, and the weight of the body equally distributed on both legs.

If the fundamental position is to be resumed, this is indicated by *feet placed together*, in two motions.

First. The right or left foot is placed inwards, at its own length in the former direction.

Second. The left or right foot is replaced in one length to the right or left with quick step.

Hands on the hips.



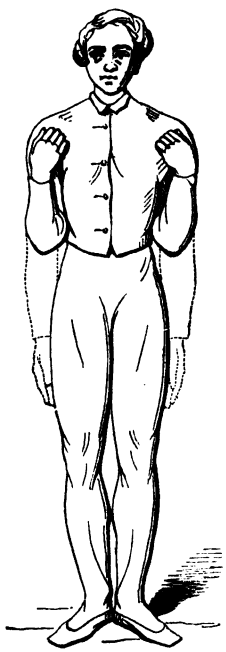
In all the preceding positions, we have more strength if they are combined with the following position.

SEVENTH POSITION.

Hands on the hips, or hips held.

Both hands are raised and clasp the haunches, with the thumb backwards, the fingers forwards, the inner part of the hand resting on the foremost edge of the hip-bone, the elbows in the same level with the shoulders, which must be kept down, and drawn backwards.

Flexion of the arms upwards.



MOVEMENTS OF THE ARMS.

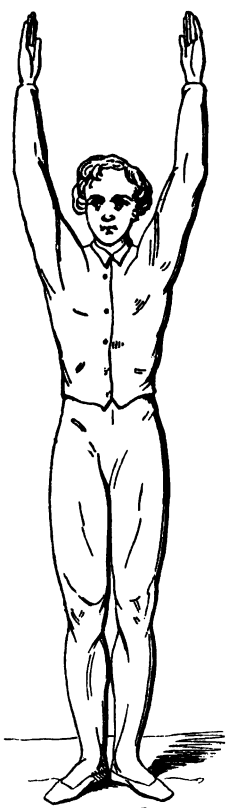
I. *Flexion of the arms upwards*, in one motion. The ordinary attitude of the body is standing with the arms hanging down at the sides, the first movement is therefore a flexion, which is performed with both the elbows held closely near the body, by which we learn to collect our strength. The movement is as follows.

The elbows are bent quickly, well drawn backwards, and put close to the trunk, so that the hands come upward, and remain quiet; the fingers are bent

easily, the nails toward the arms, in the cavity of the armpits; the knuckles consequently outward, the shoulders well drawn back, down, and immovable; if the fundamental position is to be taken, this movement is indicated by *arms extended downwards*, in one motion.

The lower part of the arm is extended quickly down, so that it is again in the fundamental position, with the hands near the thighs, while at the same time the elbows and upper part of the arms remain immovable and well drawn back,

II. *Extension of the arms upwards*, in two motions.

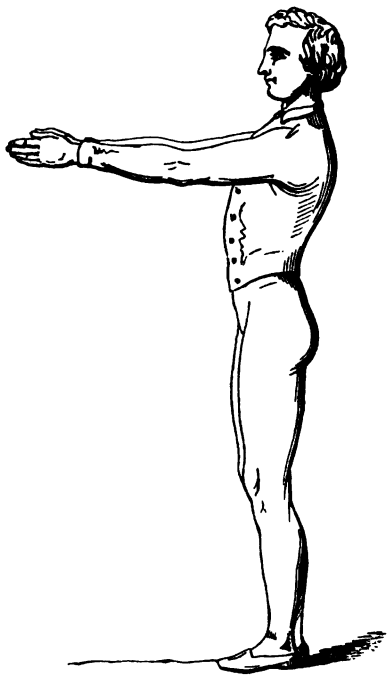


Extending movements of the arms are either horizontal or perpendicular; the perpendicular extension is either upwards or downwards.

First motion. Arms bent upwards.

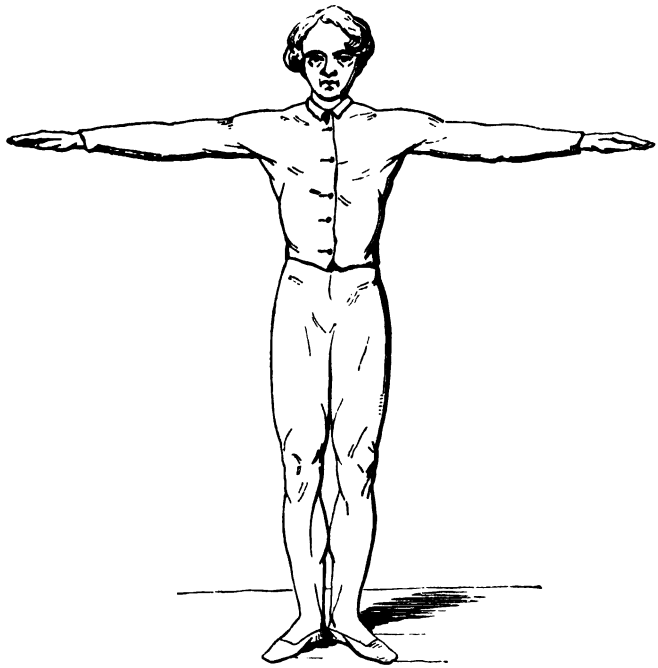
Second motion. Arms strongly extended upwards, and perpendicularly placed close to the ears, so that the distance between arm and arm corresponds to the width of the shoulders. If the arms are to be extended down again, this is done in two motions; in the first we put the elbows quickly to the sides of the trunk, so that the position of the arms is similar to *flexion of the arms upwards*. The second motion is similar to *extension of the arms downwards*.

III. *Extension of the arms forwards,* in two motions.



The first motion is similar to *flexion of the arms upwards.* (Vide illustration, page 11.) In the second motion the arms are extended straightforward, parallel to the ground and to each other, the hands being directed inwards.

IV. *Extension of the arms outwards,* in two motions.



The first motion is similar to *flexion of the arms upwards* (vide illustration, page 11); in the second motion, the arms are quickly extended apart, at an equal height, and in a line with the shoulders, which are well drawn back, with the shoulder-blades close together; arms and fingers are completely extended, and the palms of the hand directed downwards.

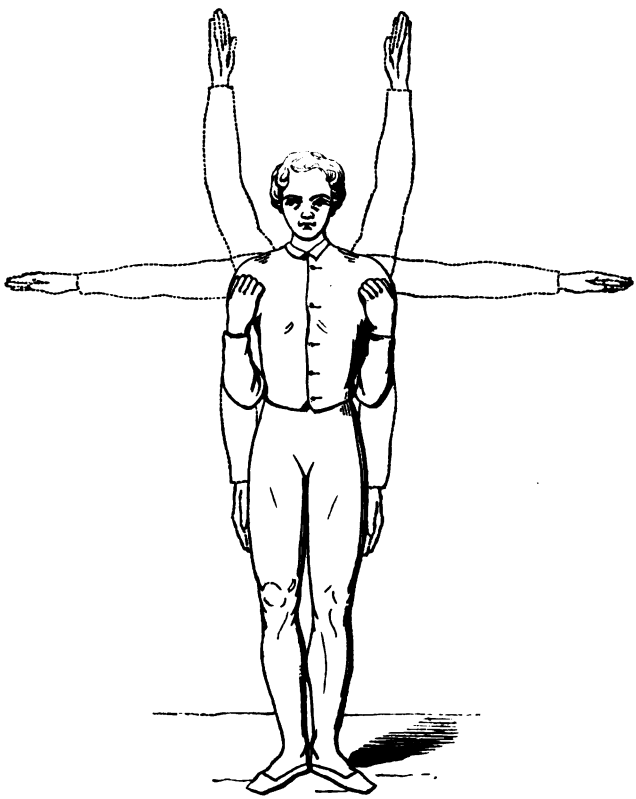
V. *Extension of the arms downwards,* in two motions.

The commencing positions are—1. Arms extended forwards. 2. Arms extended outwards. 3. Arms extended upwards.

First motion. We bend quickly the arms, draw the elbows well back, and put them firmly at our sides, the arms remaining in the position of *flexion of the arms upwards.*

Second motion. The arms are extended downwards, with the hands near the thighs.

VI. *Arms extended upwards, forwards, outwards,* and *downwards.*



We extend the arms in one of the four levels, and after having bent the arms, and put the elbows at our sides, as in the exercise of flexion of the arms upwards, we rapidly extend both arms in another level. This is done in eight motions.

First, arms bent upwards; second, arms extended upwards; third, arms bent upwards; fourth, arms extended

forwards; fifth, arms bent upwards; sixth, arms extended outwards; seventh, arms bent upwards; eighth, arms extended downwards.

VII. *Extension of the arms alternately in one and the same level.*

We make these movements alternately in one and the same level, either up and down, or forwards and outwards, which is executed from the following commencing positions.

1. Right arm extended upwards. 2. Left arm extended upwards. 3. Right arm extended outwards; left arm forward. 4. Left arm extended outwards; right arm forward.

The movement has two motions. First. Both arms are brought into the position of flexion of the arms upwards.

Second. Each arm is extended in the direction in which the other arm was in the commencing position.

VIII. *Extension of the arms alternately in different levels,* in two motions.

We make these movements alternately in two different levels, namely, in the horizontal and perpendicular; one arm is extended upwards or downwards, the other forwards or outwards.

First motion. The arms as in the position of flexion of the arms upwards.

Second motion. One arm extended horizontally, the other perpendicularly, and after having repeated the first motion, the arms are extended in different levels. During these movements we must keep the body immovable, shoulders well back and down, elbows close to the sides of the trunk, the arms and hands during the extension upwards, forwards, and downwards, at a right angle with the shoulders; during the extension outwards, in a straight line with them.

If we are able to execute these extensions with the arms, we combine them with movements of the trunk.

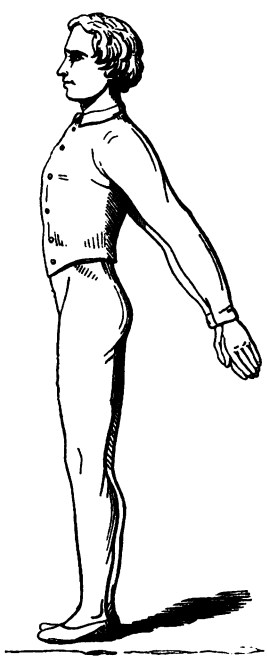
IX. *Striking out the arms,* in two motions.

First. The arms raised sideways, and bent forwards.

Second. Arms extended outwards.

In the first motion the arms are elevated, so that the hands are in the same level with both the elbows and the shoulders, the thumbs slightly touch the chest, the fingers are extended strongly, the palms of the hands directed downwards.

Arms extended backwards.



In the second motion the body remains immovable, while the arms are extended horizontally outwards (as in extension of the arms outwards), with force and quickness, behind the line of the shoulders, and as much as possible backwards.

X. *Arms extended backwards,* in two motions.

The power of keeping back the shoulders and elbows is increased by the preceding movements, as well as by the extension of the arms backwards; although this last movement, being dependent

upon the formation of the joints of the shoulders and arms, cannot be executed with altogether the same force and quickness as the other extending movements of the arms.

First motion. The elbows bent, as in flexion of the arms upwards.

Second motion. While the shoulder-blades are kept firmly backwards, as far as possible, and the palms of the hands turned towards each other, the arms are extended strongly, the thumb being directed forwards, and all the fingers put close together.

XI. *The arms alternately extended upwards, downwards, and backwards,* in four motions.

Commencing positions:

1. Right foot completely forward.
2. Left foot completely forward.
3. Feet placed apart and straight.
4. Feet placed apart and in a right angle.

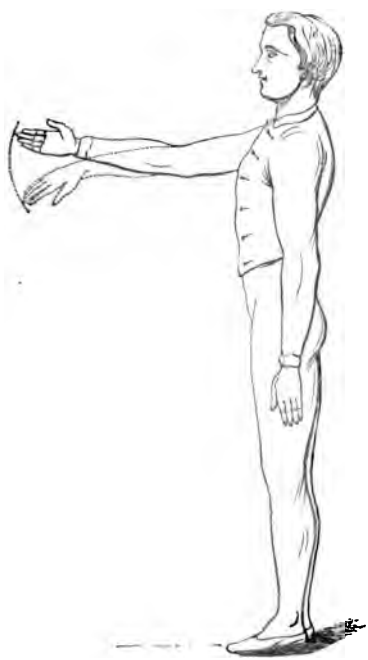
First motion. Both elbows bent, as in a flexion of the arm upwards.

Second motion. Right arm extended upwards, and left arm backwards.

Third motion. As in the first motion.

Fourth motion. Right arm extended backwards, and left arm upwards, etc. etc.

Hands turned inwards and upwards, or outwards and downwards.



XII. *Hands turned inwards and upwards, or outwards and downwards,* in one motion.

After having extended horizontally outwards or

forwards the arms, we must, without changing the position of the arms, turn the hand in the articulation of the hand and elbow either in and up, or out and downwards; the upper part of the arm is kept quiet in its horizontal position, outwards or forwards, and the palm of the hand is turned in and up, or out and downwards, by a semicircular movement, in the articulation of the elbow and wrist; hereafter the movement is repeated after the words one and two.

XIII. *Hands alternately turned inwards and outwards,* with the arms in two different horizontal directions.

Commencing positions:

1. Right arm extended forwards, left outwards.

2. Left arm extended forwards, right outwards, in one motion.

The hand of the arm which is extended outwards is turned by a quick movement, so that the palm of the hand is turned at the same time in and upwards, as in the position of "hand turned inwards and upwards." The hand of the arm which is extended forwards is turned out and downwards, and its internal side is the same as in "hand turned outwards and downwards."

Faults generally committed during the movements of the arms are—1. That the body does not remain quiet, but bends in the direction in which the exercise is done. 2. That the shoulders are not kept sufficiently back and down. 3. That the elbows are not kept sufficiently close to the body in the single motions of the different movements, 4. That the arms, when they are to be extended upwards, do not retain their perpendicular positions along the ears.

MOVEMENTS OF THE HEAD.

The commencing positions are all standing and sitting positions.

I. *Flexion of the head forwards*, in two motions.

First. Bend the head forwards; the chin is gently moved down and forwards, till the face forms an angle of forty-five degrees with the trunk, without any change in the position of the body.

Second. Head extended upwards; the head is slowly raised till the commencing position is resumed.

II. *Flexion of the head backwards*, in two motions.

First. Bend the head backwards; the chin is gently moved up and backwards, till an angle of forty-five degrees is formed backwards.

Second. Head extended upwards, as in the preceding movement.

III. *Flexion of the head to the left*, in two motions.

First. Head bent to the left, till the angle of forty-five degrees is formed with the trunk; the face is always directed forwards.

Second. Head extended upwards.

Faults.—1. The back is bent either forwards or backwards. 2. One or the other shoulder is raised.

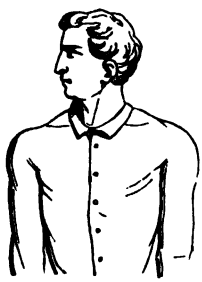
IV. *Flexion of the head to the right*, as in III.

V. *Flexion of the head alternately forwards and backwards.*

VI. *Flexion of the head alternately to the right and left.*

VII. *Flexion of the head forwards, to the right, backwards, to the left,* one after the other; this is also called, if executed quickly, active rotation or revolving of the head, which is either to the right or left.

VIII. *Head turned to the right,* in two motions.



First. Turn the head to the right. The patient turns the head, which is placed with its axis in the same vertical line with the body, to the right, till the right eye comes in a straight line with the anterior part of the right articulation of the shoulder.

Second. Turn the head forwards. The head is gently turned till it is in the commencing position.

IX. *Head turned to the left,* as in VIII.

X. *Head alternately turned to the right and left.*

XI. *Head turned to the right, and bent backwards,* in four motions.

First. Turn the head to the right.

Second. Bend the head backwards.

Third. Extend the head upwards.

Fourth. Turn the head forwards.

XII. *Head turned to the right, and bent forwards,* in four motions, as in XI.

XIII. *Head turned to the left, and bent forwards,* in four motions, as in XI.

XIV. *Head turned to the left, and backwards flexed,* in four motions, as in XI.

The following four exercises differ from the preceding four, in the flexion of the head being first executed, and the turning following afterwards.

XV. *Flexion of the head backwards, and then turning to the left,* in four motions.

First. Bend the head backwards.

Second. Turn the head to the left.

Third. Extend the head upwards.

Fourth. Turn the head forwards.

XVI. *Flexion of the head forwards, and turning to the right,* in four motions, as in XV.

XVII. *Flexion of the head backwards, and turning to the left,* in four motions, as in XV.

XVIII. *Flexion of the head forwards, and turning to the left,* in four motions, as in XV.

Faults.—1. The trunk does not remain in its vertical position, but moves forwards or backwards, with the head bent. 2. One of the shoulders is raised while the head is bent sideways. 3. The shoulders must not remain in their positions, but turn in the direction in which the head is turned.

MOVEMENTS OF THE EYES.

These movements are done with one eye, or with both at the same time.

Commencing positions:—

1. All vertical positions with the head upright, straight, or turned.

2. All horizontal positions with the head turned or straight.

The different movements of the eyes are indicated by—

Look—1. To the right; 2. Left; 3. Right and upwards;

4. Left and downwards; 5. Straightforward; 6. Left and upwards; 7. Right and downwards; 8. From the right to the left, and *vice versâ*, in a straight line; 9. In a circle from the left to the right, and *vice versâ*.

Faults.—1. The head turns, bends, or is raised to the side where the eyes are turned. 2. When looking up, the front is frowning. 3. When the eyes move from one side to the other, they make a half circle, instead of going in a straight line across.

MOVEMENTS OF THE LEGS.

The movements of the legs are forwards, backwards, outwards, inwards, upwards, and downwards.

I. *The trunk raised on the toes.*

Commencing positions:—

1. Hips held.

2. (*a*) Hips held; (*b*) right or left foot placed forwards.

3. (*a*) Arms extended upwards; (*b*) right or left foot placed forwards.

4. (*a*) Hips held; (*b*) feet placed close together.

5. (*a*) Hips held; (*b*) feet close together; (*c*) right or left foot put forwards.

6. (*a*) Hips held; (*b*) feet placed apart.

7. (*a*) Arms extended upwards; (*b*) feet placed apart.

In every one of these commencing positions there are two motions made.

First. The body is raised on the toes.

Second. The body down.

In the first motion, the body is gently raised upon the toes by extension of the instep. The position of the body remains as in the previous commencing position, the knees extended, the trunk and head, which must be held in a straight line with the legs, are placed forward during the raising, without losing the balance.

The second motion is executed as soon as we replace ourselves in the commencing position.

Faults generally committed during this movement are— 1. The body and arms are not maintained in the same position; if extended, they must be in the same direction as in the commencing position. 2. The heels are separated. 3. The knees are bent. 4. The instep is not sufficiently extended so as to raise the body.

II. *Flexion of the knees.*

Commencing positions:—

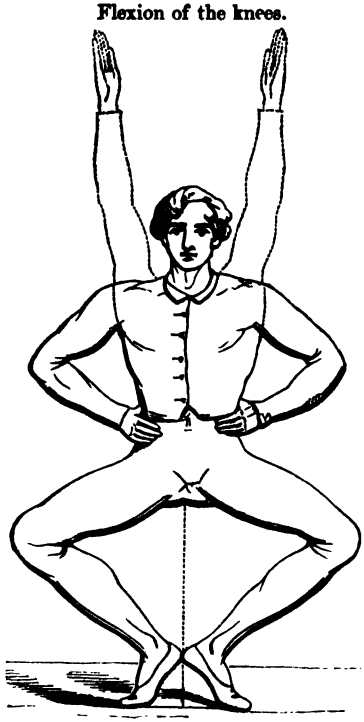
1. (*a*) Hips held; (*b*) body raised on the toes.

2. (*a*) Arms extended upwards; (*b*) body raised on the toes.

3. (*a*) Hips held; (*b*) feet placed outwards; (*c*) body raised on the toes.

In each of these three commencing positions we make the two following motions:

Flexion of the knees.



First. Knee bent. The knees are bent slowly, so far as to form a right angle; the body is held perpendicularly, and the trunk is immovable, the weight resting forward over the soles of the feet; the heels are raised on the toes, which lean to each other, and the knees placed outwards, so that their internal sides are in the greatest flexion, and perpendicular to the outsides of the feet.

Second. The body is raised upwards, and the knees slowly ex-

tended, without the body losing its perpendicular position.

III. *Hips forward,* in two motions.

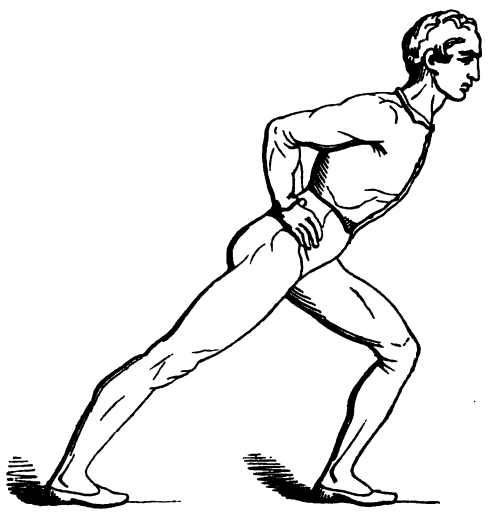
Commencing position: (*a*) Hips held, (*b*) feet placed outwards, (*c*) body raised on the toes.

First motion. The hips are placed slowly forwards, in a horizontal direction.

Second motion. The body is raised upwards, and replaced in the previous commencing position.

Faults during these two last movements are—1. Extending unequally the legs, trunk, head, and arms. 2. The heels are placed too much down, and the knees too little bent. 3. The chin is too much pushed forward. 4. The seat is pushed too much backward, so that the body bends forward. 5. The arms, when extended upwards, do not remain in this position perpendicularly along the ears.

IV. *Flexion of the knee of the foot, which is placed completely forwards and straight,* in five motions.



First. Hips held.

Second. Right or left foot completely placed forwards.

Third. Right or left knee bent.

Fourth. Body raised on the toes.

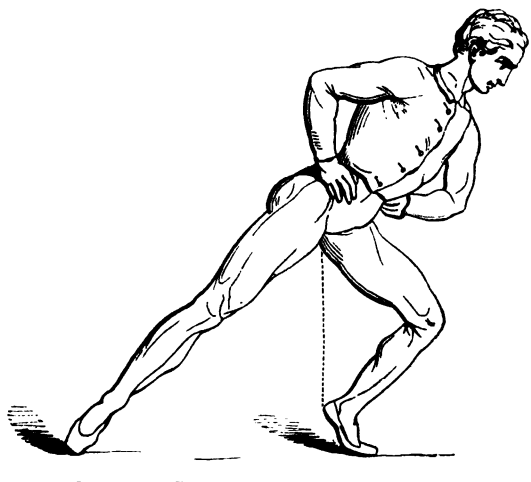
Fifth. Knee extended upwards.

The first two motions are known; in the third the weight of the body is totally and entirely placed on the foremost knee, and pushed forwards on it still further; in the fourth motion the foremost heel is always more raised, and the foremost articulation of the knee more bent. (Vide the following drawing.) The side which is directed to the front retains a straight line, inclined to the ground.

In the fifth motion the foremost knee is extended, and the heel placed down, till the commencing position, consisting of the two first motions, is re-established.

The faults are—1. The foremost heel is not sufficiently raised from the ground. 2. The foremost knee does not retain the same direction with the foot. 3. The body shakes, and the seat and leg do not remain in one and the same line.

V. *Flexion of the knee, of the foot which is put completely forwards, in a right angle,* in six motions.



First. Hips held.

Second. Feet placed close together.

Third. Right or left foot placed entirely forwards.

Fourth. Right or left knee flexed.

In the fourth motion, the foremost right or left knee is bent, and at the same time the heel of the foot which is behind remains firm on the ground in an inclined straight line. (The drawing shows the body raised on the toes in this motion.)

Fifth. Body raised on the toes.

Sixth. The foremost knee is extended slowly till the commencing position is resumed.

Faults.—1. The posterior leg is bent. 2. The posterior heel is raised in the fourth motion. 3. We do not push ourselves forward so much on the foremost knee as to lose the balance.

VI. *Flexion of the knee of the posterior leg, while the other is placed forwards or straightforward,* in five motions.

First. Hips held.

Second. Left or right foot placed forwards.

Third. Extended upon the toes.

Fourth. Left or right knee bent.

The weight of the body is entirely placed on the posterior left or right foot, the knee of which is gently bent during the position on the toes, while the body above them is retained perpendicularly.

Fifth. The knee extended upwards. The posterior knee is extended slowly, in order to regain the commencing position,

Flexion of the knee in the position left foot placed forwards.

and to lay the weight of the body on both legs. The same movement is done in the position, *one foot placed straightforward.*

Flexion of the knee in the position left foot placed straightforward.

The faults during this movement are—1. The posterior knee is not placed entirely outwards. 2. The body does not form a line perpendicular with regard to the ground. 3. The anterior knee is too much extended. 4. The head does not remain perpendicular. 5. The position of the toes is not retained.

Flexion of one knee upwards.

VII. *Flexion of one knee upwards,* in three motions.

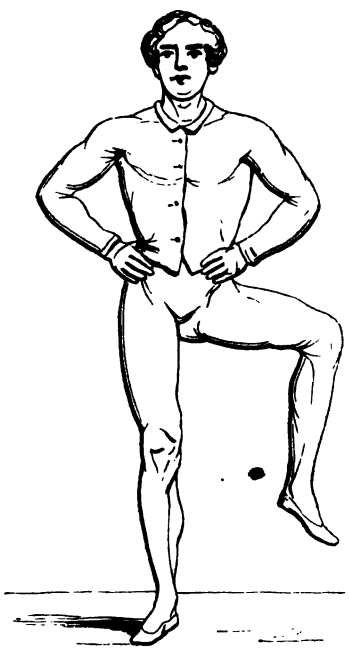
First. Hips held.

Second. Right or left knee bent upwards. The right or left knee is raised straightforward, so high that the thigh forms a right angle with the body, at the same time the knee is bent so that the leg from the knee-joint to the tips of

the toes, which must be extended towards the ground, becomes perpendicular.

Third. The foot placed down. The raised knee is extended, while the foot is placed down, by a short step near the other, which remains quiet, the body not losing its vertical position.

VIII. *Turn the knee* (*bent upwards*) *out and in*, in five motions.



First. Hips held.

Second. Right or left knee bent upwards.

Third. Knee placed outwards. The knee is placed slowly outwards, so that the thigh is vertical with the shoulders and hips, which remain quiet in the articulations.

Fourth. Knee placed forwards. The position as in the second motion.

Fifth. Foot placed down.

The faults during the last two movements are— 1. The trunk is inclined backwards, and on the side of the leg on which we stand. 2. The knee of the leg on which the weight of the body rests, is bent. 3. The knee which is raised up, is held below the fixed angle. 4. The instep is not extended.

IX. *Extension of the knee* (*bent upwards*) *backwards*, in five motions.

First. Hips held.

Second. Right or left knee bent upwards.

Third. Knee extended backwards. The right or left leg is gently placed backwards, while the knee is ex-

tended in the same direction, in such a manner that also the foot is extended at the same time as the leg, as far as possible from the ground, as well as from the leg on which we stand.

In order to collect the strength, we must press strongly the palms of the hands and the internal sides of the thumbs towards the hips.

Fourth. Knee bent upwards. The extended foot is bent, and put in the same position as in the second motion.

Fifth. Foot placed down.

The faults are—1. That the knee which is to be placed backwards is bent, in order to place the foot very high from the ground. 2. That the body and chin are pushed forwards, with the intention of a counterbalance to the leg. 3. That the leg on which the weight of the body rests, bends, and the body shakes.

MOVEMENTS OF THE TRUNK.

These are turning and flexing movements, which must be performed very gently; the difference between the two movements being, that during the flexion the shoulders and hips have the same direction; during the turning the hips remain in the commencing position, and the shoulders are placed in a line transverse to the lower part of the trunk.

I. *Flexion of the trunk backwards*, in two motions.

Commencing positions:

1. Hips held.

2. Arms extended upwards.

3. (*a*) Arms extended upwards; (*b*) feet placed closely together; (*c*) right or left foot placed forwards.

4. (*a*) Arms extended upwards; (*b*) feet placed apart.

5. (*a*) One arm extended upwards, the other on the hip; (*b*) one foot placed forwards. (Vide figure.)

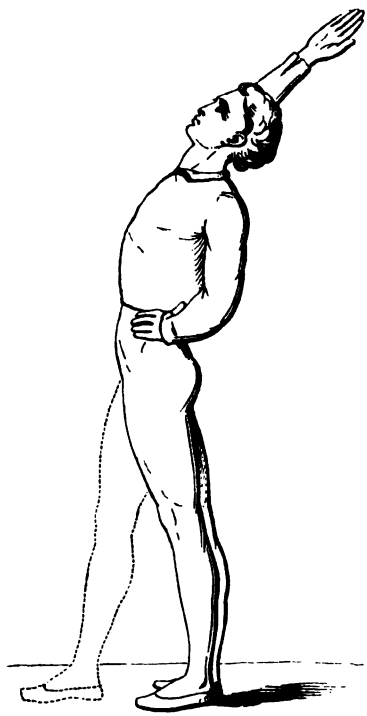
First motion. The trunk bent backwards.

The knees are kept extended, the body bent gently backwards, the position of the head with respect to the

body remains immovable, and the same as in the commencing position; the hips are pushed a little forwards.

If the arms be extended, they must be kept during the flexion of the trunk continually in the same direction to the ears.

Flexion of the trunk backwards.



If one foot be pushed forwards, the weight of the body falls during the flexion principally on the posterior leg, the knee of which must not be kept stiff during this movement; by this means, the loins and upper foremost part of this leg are strongly extended.

If both feet be placed apart, we are better able to make the flexion backwards, not only because we have a greater basis, but because we are then also able to bend both knees, and thereby an angle is formed forwards, which corresponds to the angle which our body makes when bending the lumbar vertebræ backwards.

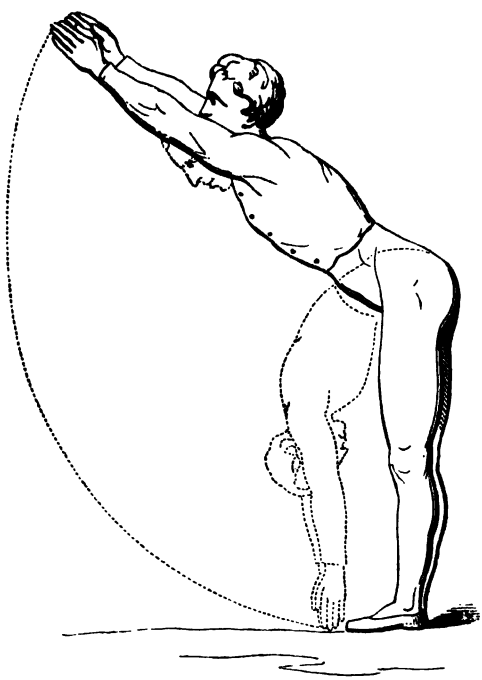
Second motion. Trunk extended upwards.

We must gently raise the body without changing the position of the head, with respect to the trunk, till we resume the commencing position, while the knees, if they had been previously extended, remain immovable; and if they were bent, they must be raised upright, at the same time with the trunk.

Faults.—1. In the first and second commencing posi-

tions the knees are bent. 2. The head is thrown either backwards or forwards. 3. The arms do not remain in their perpendicular position near the ears, and they do not follow the movements of the trunk.

II. *Flexion of the trunk forwards,* in two motions.



Commencing positions:

1. Hips held.

2. Arms extended upwards.

3. (*a*) Arms extended upwards; (*b*) feet placed close together; (*c*) right or left foot placed forwards.

4. (*a*) Arms extended upwards; (*b*) feet placed apart.

First motion. Trunk bent forwards.

We bend the trunk slowly forwards, the knees remain extended, the head with the face in the direction of the front, the eyes straightforward.

If the arms are extended, they remain in their position near the ears, and must not be removed from them during the flexion.

Second motion. Trunk extended upwards.

We raise ourselves slowly upright, until we are in the commencing position.

These two movements can be made also with the feet put close together, or with a distance between them.

The greatest flexion is when the upper part of the body is almost in a right angle to the lower part.

III. *Flexion of the trunk down and forwards.*

The same commencing position as in the second movement.

Can be made also with the head bent down, if the movement be continued till the ends of the fingers touch the ground, and the face reaches the knees.

Faults.—1. The knees are bent. 2. In the third commencing position the foremost knee is not extended sufficiently, or the posterior heel does not remain on the ground. 3. The head changes its direction. 4. The seat is pushed too much backwards. 5. The arms come before the head.

IV. *Flexion of the trunk sideways,* in two motions.

Commencing positions:

1. Feet put close together.

2. (*a*) Right or left arm extended upwards; (*b*) feet put together.

3. (*a*) Right or left arm extended upwards; (*b*) feet put close together; (*c*) right or left foot put forwards.

First motion. Bend the trunk to the right or left.

The trunk is bent slowly to the right or left side; both feet remain immovable and firm on the ground; the knees straight; the shoulders immovable, on the same level with the hips; the hand (at the side on which the body bends), on the outside of the thigh, is put down till it touches the outside of the knee, by which we feel whether we change the above-named direction or not.

Second motion. The trunk extended upwards.

If the movement be performed with one arm extended upwards, this must be the arm which is opposite the bending side, and it must remain in its position.

V. *Flexion of the trunk on both sides, with alternately extended arms*, in five motions.

Commencing positions as Nos. 2 and 3 in IV.

First motion. Bend the trunk to the right or left.

Second. Arms extended upwards.

Third. Change the arms.

Fourth. Bend the trunk to the left or right.

Fifth. Trunk extended upwards.

Faults.—1. The knee, on the side where the body is bent, is not kept extended. 2. The foot of the opposite side is raised. 3. The body is bent either forwards or backwards, so that the flexion is not in the same level with the hips. 4. The head bends too much on one side. 5. The hand of the side which is bent does not follow the outside of the thigh. 6. The arm, if extended, is removed from the head.

VI. *Turn the trunk on the right or left side*, in two motions.

Commencing positions:

1. Feet put close together.

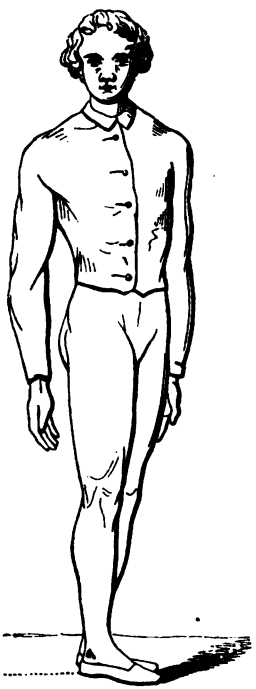
2. (*a*) Hips held; (*b*) feet put close together; (*c*) right or left foot forwards.

3. (*a*) Hips firmly held; (*b*) feet put close together; (*c*) feet put apart.

First motion. The trunk turned to the right or left. The upper part of the trunk is gently moved to the right or left, while the hips remain immovable in their direction; the legs straight and close, the feet quite close to one another; the head itself does not turn, but moves at the same time with the trunk, and remains with the elbows in the same position, with respect to the upper part of the trunk, as in the commencing position.

Second motion. The trunk turned forwards. The

Turning of the trunk to the right side.



shoulders and upper part of the body are slowly turned forwards, till they are in the same direction and level as the hips.

Faults.—1. The knees are bent. 2. The feet are not kept firmly on the ground. 3. The head and body are not kept immovable.

VII. *Flexion of the trunk backwards, while it is turned to the left or right.*

Commencing positions:

1. (*a*) Hips held; (*b*) trunk turned to the left or right.

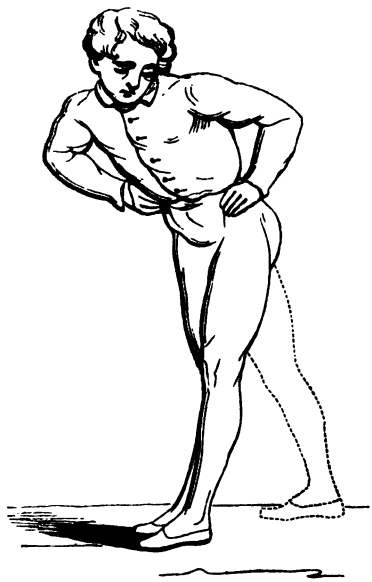
2. (*a*) Arms extended upwards; (*b*) trunk turned to the left or right.

VIII. *Flexion of the trunk forwards, while this is turned to the left or right.*

This movement is also performed with the feet put close together.

The faults are the same as in the other movements with the trunk.

Flexion of the trunk forwards and turning to the left.



The other movements of the trunk are all analogous, in their change and combination of flexion and turning, to the movements of the head above mentioned.

ORDER IN WHICH THE PRECEDING MOVEMENTS ARE TO BE LEARNED BY HEALTHY PERSONS.

Table I.

1. Fundamental position.
2. Hold the hips.
3. Feet placed alternately close together and in a right angle.
4. Feet placed forwards and backwards.
5. Feet placed sideways.
6. The body raised on the toes, with the hips held.

7. Arms bent upwards and extended downwards.

8. Flexion of the trunk backwards and forwards, with the hips held.

9. The body raised on the toes, with the hips held, and one foot placed forwards.

10. Extension of the arms upwards and downwards.

TABLE II.

1. One foot placed straightforward and backwards, with the hips held, and feet together.

2. Feet alternately placed forwards.

3. Raising of the body on the toes, with the hips held, and feet close together.

4. Extension of the arms upwards and downwards.

5. Flexion of the trunk backwards and forwards, with the hips held.

6. Raising of the body on the toes, with the arms extended upwards, and one foot placed forwards.

7. Flexion of the head forwards and backwards.

8. The same to the right and left.

9. Raising of the body on the toes, with the hips held, and feet placed apart.

10. Extension of the arms outwards and downwards.

TABLE III.

1. Raising of the body on the toes, with the hips held, and one foot placed straightforward.

2. Extension of the arms forwards and downwards.

3. Flexion of the trunk backwards and forwards, with the hips held.

4. Flexion of both knees, with the hips held.

5. Flexion of the head.

6. Turning of the trunk, with the hips held, and feet placed close together.

7. Extension of one arm upwards, the other downwards (repeated alternately).

8. Repetition of No. 1.
9. Extension of the arms upwards and downwards.

Table IV.

1. Raising of the body on the toes, with arms extended upwards, and one foot straightforward.
2. Turning of the head.
3. Extension of the arms upwards and downwards.
4. Flexion of the trunk backwards and forwards, with the arms extended upwards.
5. Flexion of both knees, with the hips held.
6. Turning of the trunk, with the hips held, and feet placed close together.
7. One foot placed completely forwards, from the fundamental position, and then with the feet close together.
8. Extension of the arms upwards and downwards.
9. Flexion of the trunk to the right or left, with feet placed close together and one arm extended upwards.
10. Feet alternately placed completely forwards, from the fundamental position, as well as from that of the feet close together.
11. Flexion of the trunk forwards, with arms extended upwards.

Table V.

1. Flexion of both knees, with the hips held.
2. Extension of both arms from one level to another (upwards, outwards, forwards, and downwards).
3. Flexion of the trunk backwards and forwards, with arms extended upwards, and one foot placed straightforward.
4. Flexion of both knees, with arms extended upwards.
5. Turning of the head.
6. Repetition of No. 2.
7. Flexion of the foremost knee, with the hips held, and the foot completely put straightforward, also alternately with the other knee.

8. Flexion of the trunk to the right and left, with feet placed close together, and one arm extended upwards.

9. Extension of one arm forwards, the other outwards, and change of the arms in the same level.

10. Feet alternately placed completely forwards, the other outwards, from the fundamental position, as well as from that with feet closed.

Table VI.

1. Flexion of both knees.

2. Extension of the arms backwards.

3. Flexion and turning of the head combined.

4. Flexion of the trunk backwards and forwards, with arms extended upwards, one foot placed straightforward, and the head down.

5. Flexion of the posterior knee, with the hips held, and one foot placed forwards.

6. Extension of the arms upwards and downwards, with feet placed close together, and flexion of the trunk sideways.

7. Flexion of the anterior knee, with the hips held, and one foot placed straight completely forwards.

8. Extension of the arms alternately in different levels, one arm upwards, the other outwards or forwards.

9. Turning of the trunk, with flexion forwards or backwards, and the hips held.

10. Flexion of one knee upwards, with the hips held.

11. Extension of the arms from one level to another, upwards, outwards, forwards and downwards.

Table VII.

1. Flexion of the foremost knee, with the hips held, and one foot placed completely forwards.

2. Extension of the arms upwards and downwards, with turning of the trunk to the right and left.

3. Turning of the head, with flexion.

4. Extension of one arm forwards, the other outwards,

and alternately placed in the same level, with one foot placed completely forwards.

5. Flexion of the trunk backwards and forwards, with the feet placed apart, and the arms extended upwards.

6. Flexion of one knee upwards, and extension of the same leg backwards, with the hips held.

7. Flexion of the trunk sideways and one arm extended upwards, first with the feet close together, and then one foot placed forwards.

8. Repetition of No. 1.

9. Turning of the hand inwards and outwards, with the arms extended forwards or outwards.

10. Flexion of one knee upwards, which is then brought outwards.

11. Flexion of the arms upwards.

Table VIII.

1. Flexion of the posterior leg, while one foot is placed forwards, with the hips held.

2. Turning of the hand inwards and outwards, with one arm extended forwards, the other outwards.

3. Flexion of the head in all four directions.

4. Flexion of the trunk backwards and forwards, with one arm extended upwards, first with closed feet, then one foot placed forwards.

5. Extension of one arm upwards, and the other downwards, executed alternately.

6. Flexion of the trunk forwards.

7. Turning of the trunk to the right or left, with flexion of the body forwards or backwards, and arms extended upwards.

8. Flexion of both knees, with the hips held, and feet placed apart.

9. Turning of the hands outwards and inwards, with one arm extended forwards, the other outwards.

10. Turning of the trunk on one side, with the hips held (first closed feet, then one foot placed forwards).

Table IX.

1. Flexion of both knees, with the feet separated, the hips held and brought forwards.
2. Turning of the hands inwards and outwards, with arms extended forwards or outwards.
3. Flexion of the head, with the hips held.
4. Flexion of the trunk forwards and backwards.
5. Flexion of one knee upwards, and extension of the leg backwards.
6. Flexion of the trunk to one side.
7. Extension of the arms upwards, outwards, forwards, and backwards.
8. Turning of the trunk on one side, with flexion of the body to the right or left.
9. Turning of the hand inwards and outwards, with change of the position of the feet, and different direction of the trunk.
10. Flexion of one knee upwards, and extension of the leg forwards.

Table X.

1. Flexion of the foremost knee, with the hips held, and one foot placed forwards.
2. Extension of the arms upwards and downwards, with turning of the trunk on one side, and flexion of the trunk backwards.
3. Flexion of the trunk forwards, first with feet closed, then one foot placed forwards.
4. Flexion of the knees upwards, and extension of the leg backwards.
5. Flexion of the head backwards, with flexion of the trunk forwards, and the hips held.
6. Flexion of the trunk on one side, first with closed feet, then one foot placed forwards.
7. Raising of the body on the toes, with the hips held, and the elbows drawn back as much as possible.
8. Flexion of both knees, while the body is raised on the toes, and the arms extended upwards.

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